Materials Safety

Nitric Acid/Hydrofluoric Acid Exposure

A Message from Rick Kelly

New group members may have had some ESH training in earlier positions. That training may not, however, be adequate. Take the time to get thoroughly trained for instruments and procedures you are about to use. In particular, be sure you know what to do if something goes wrong.

—Paul Alivisatos

Incident

A student working in a MSD lab experienced a minor exposure to vapor from a nitric acid/hydrofluoric acid etching operation.

The student was attempting to etch a germanium wafer in a mixture of nitric and hydrofluoric acids in a fume hood. He had not performed this particular operation previously but had received verbal instructions from another member of the group. The reaction was more aggressive than expected so he closed the hood and waited until the reaction slowed before attempting to recover his sample.

When he opened the sash he smelled a stinging odor and felt something "warm" on his cheek. Aware of the unique toxicity of hydrofluoric acid as a result of his training, he sought the help of another student in the group, applied calcium gluconate as a first aid measure and dialed 7911 to summon the Fire Department paramedics.

As a precautionary measure, the Fire Department transported the student to the hospital for further evaluation. The hospital determined that he suffered no injury and released him without treatment.

Evaluation

This student was previously part of a different research group and had recently joined the group where this incident occurred. Staff in this lab believed his training to perform acid etching was more advanced than it actually was. The guidance provided was general rather than specific and not adequate under the circumstances. He used too little acid at a stronger concentration than appropriate and was working after business hours when few people were around to provide help. Fortunately, his response after the exposure was exactly correct and he was not injured.

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